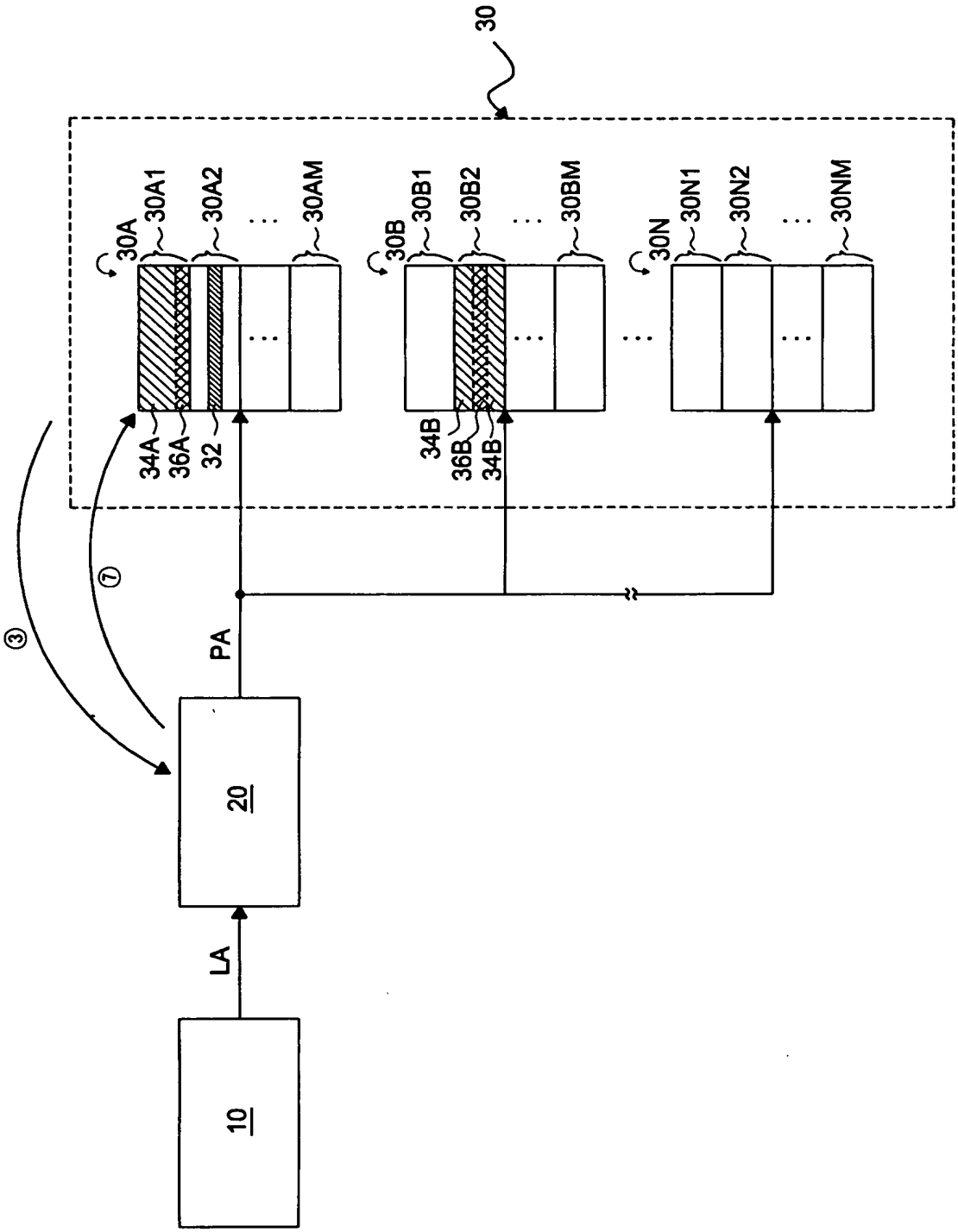

FIG. 1 (PRIOR ART)

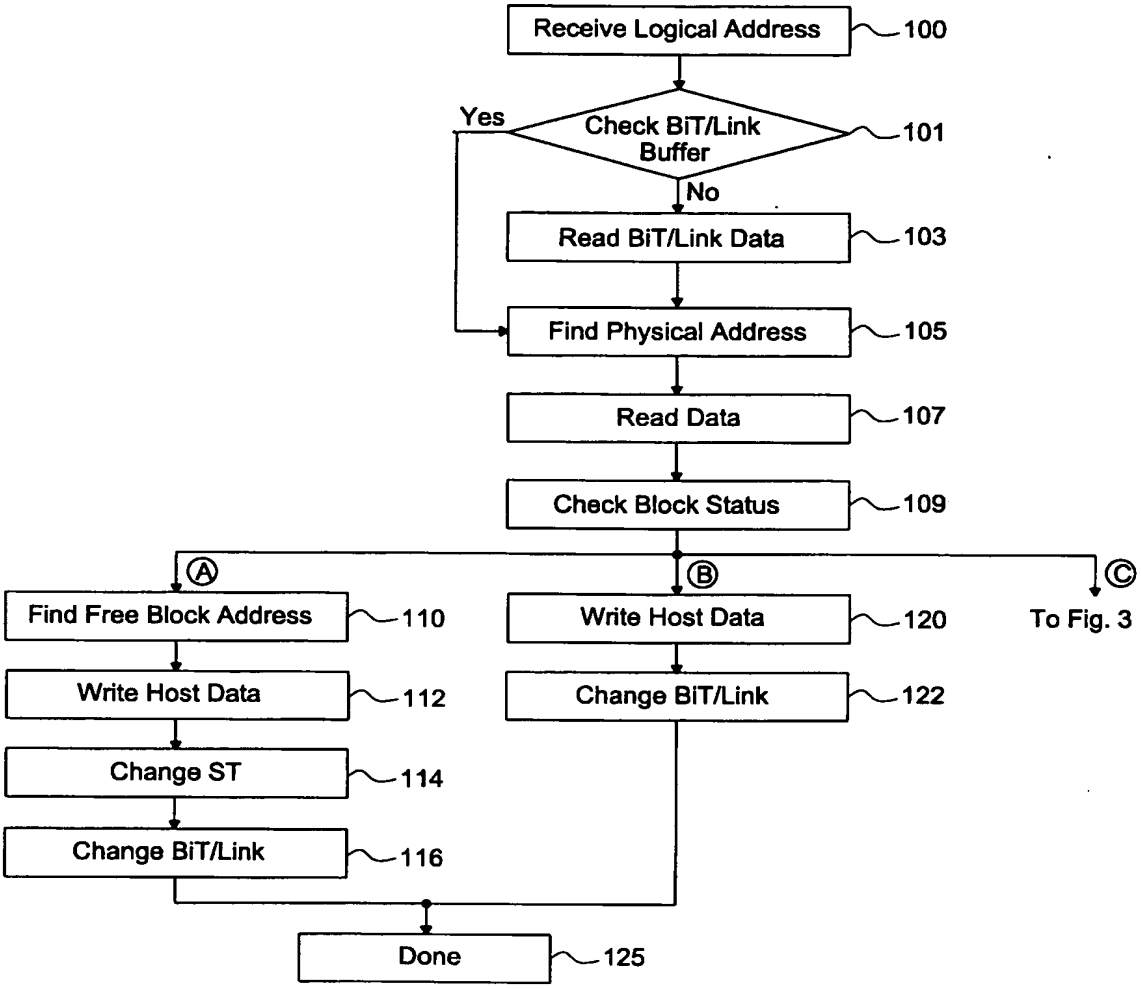
Receive Logical Address
100
Yes
Check BiT/Link Buffer
101
No
Read BiT/Link Data
103
Find Physical Address
105
Read Data
107
Check Block Status
109
Ⓐ
Ⓑ
Ⓒ
Find Free Block Address
110
Write Host Data
112
Change ST
114
Change BiT/Link
116
Write Host Data
120
Change BiT/Link
122
To Fig. 3
Done
125

FIG. 2

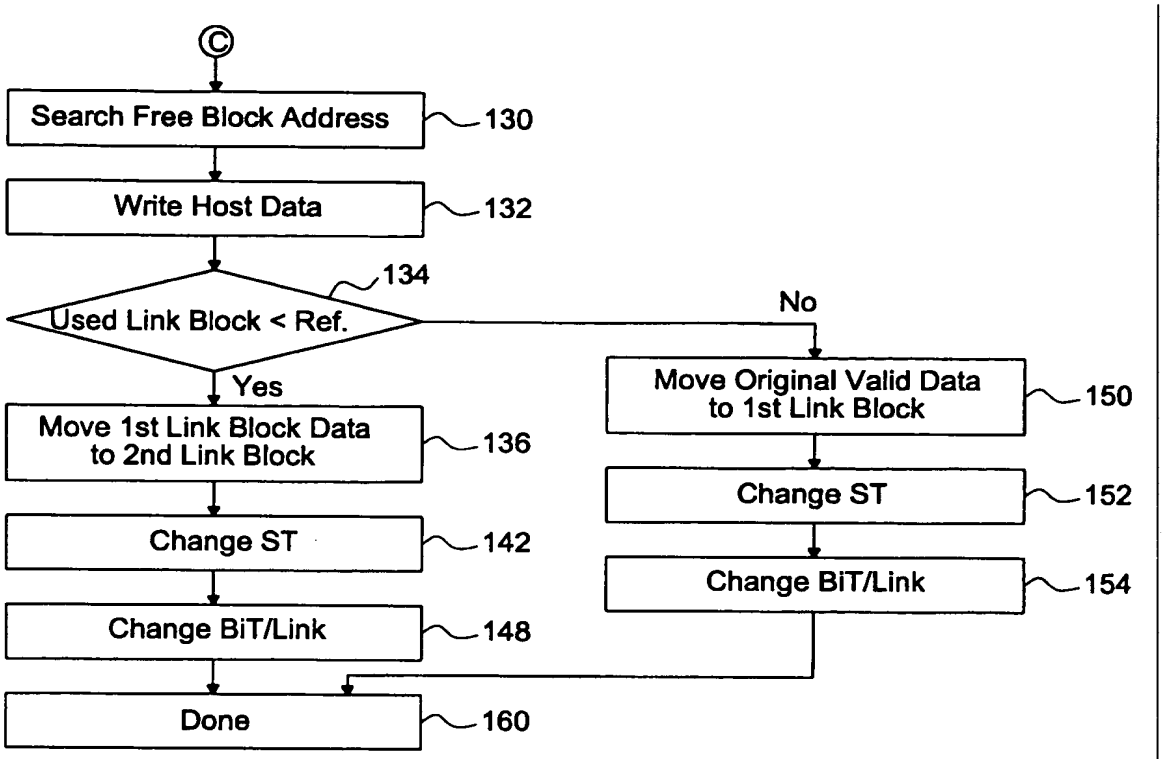
C
Search Free Block Address
130
Write Host Data
132
134
Used Link Block < Ref.
No
Yes
Move 1st Link Block Data to 2nd Link Block
136
Change ST
142
Change BiT/Link
148
Move Original Valid Data to 1st Link Block
150
Change ST
152
Change BiT/Link
154
Done
160

FIG. 3

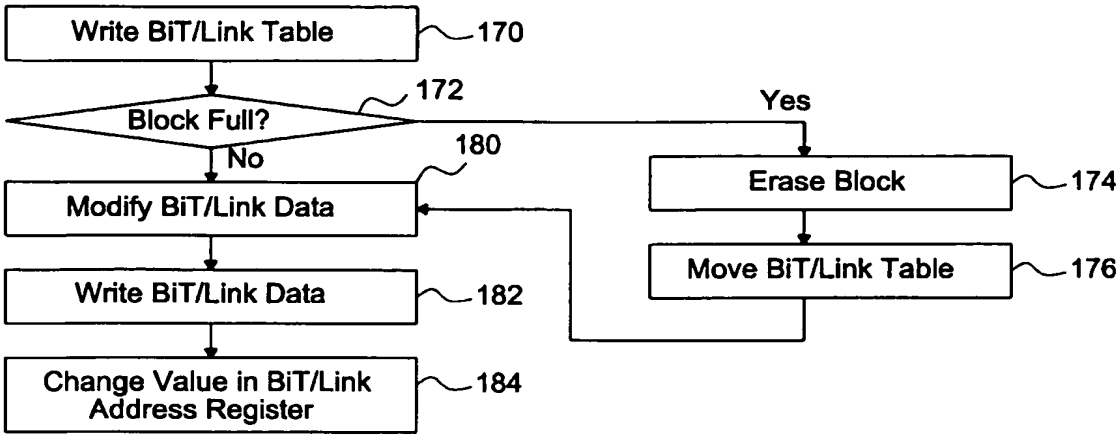
Write BiT/Link Table
170
Block Full?
172
Yes
No
180
Modify BiT/Link Data
Erase Block
174
Move BiT/Link Table
176
Write BiT/Link Data
182
Change Value in BiT/Link Address Register
184

FIG. 4

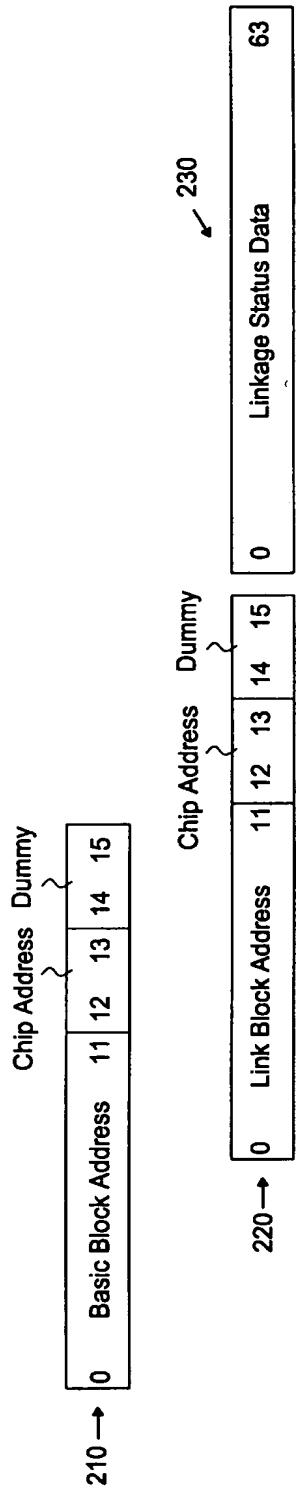
230
Linkage Status Data
0
63
Dummy
Chip Address
Link Block Address
0
11
12
13
14
15
220
Dummy
Chip Address
Basic Block Address
0
11
12
13
14
15
210

FIG. 5

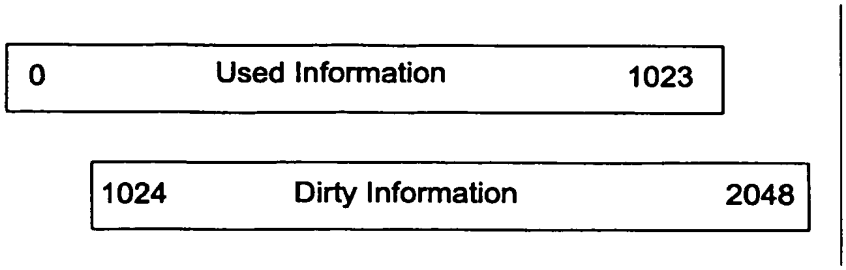

FIG. 6

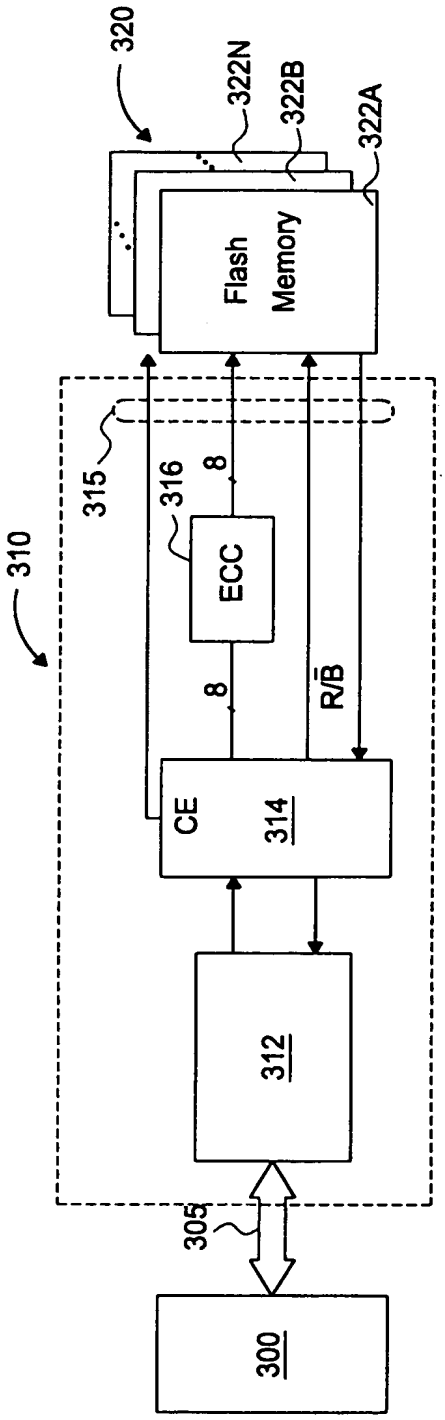
320
322N
322B
322A
Flash Memory
315
316
8
ECC
310
8
R/B
CE
314
312
305
300

FIG. 7

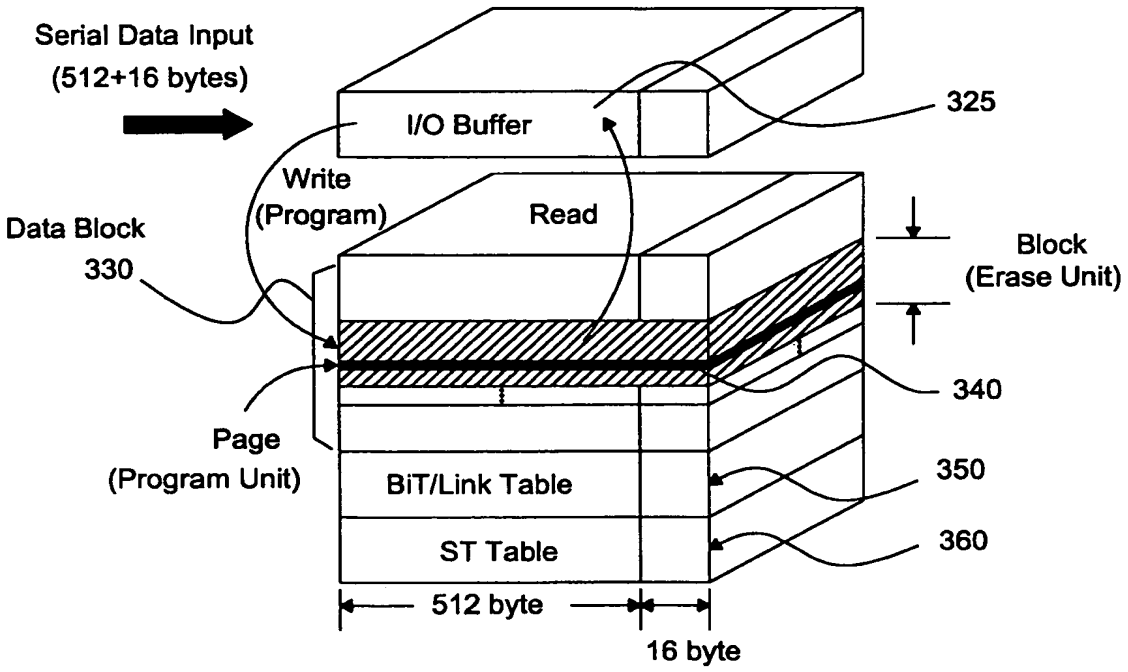
Serial Data Input
(512+16 bytes)
I/O Buffer
325
Write
(Program)
Read
Data Block
330
Block
(Erase Unit)
340
Page
(Program Unit)
BiT/Link Table
350
ST Table
360
512 byte
16 byte

FIG. 8

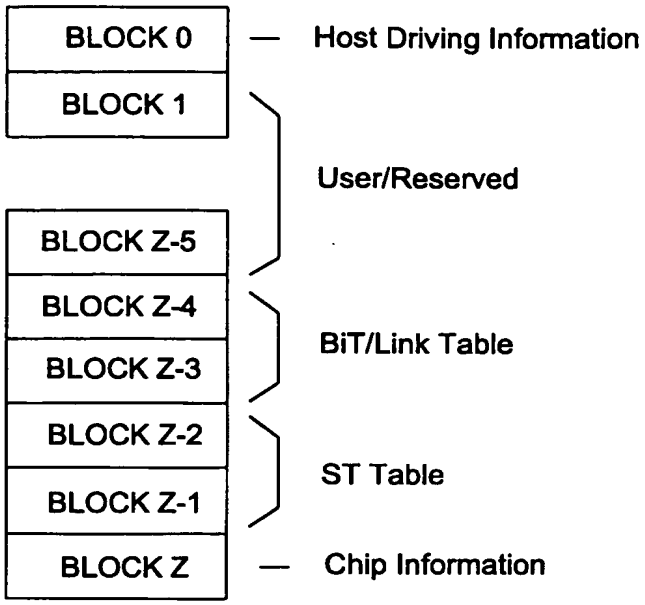
BLOCK 0
BLOCK 1
BLOCK Z-5
BLOCK Z-4
BLOCK Z-3
BLOCK Z-2
BLOCK Z-1
BLOCK Z
Host Driving Information
User/Reserved
BiT/Link Table
ST Table
Chip Information
350

FIG. 9

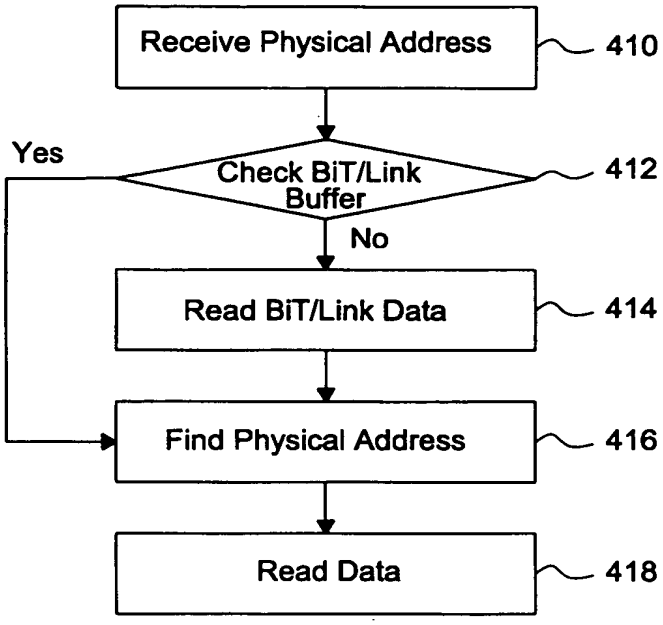
Receive Physical Address
410
Yes
Check BiT/Link Buffer
412
No
Read BiT/Link Data
414
Find Physical Address
416
Read Data
418

FIG. 10

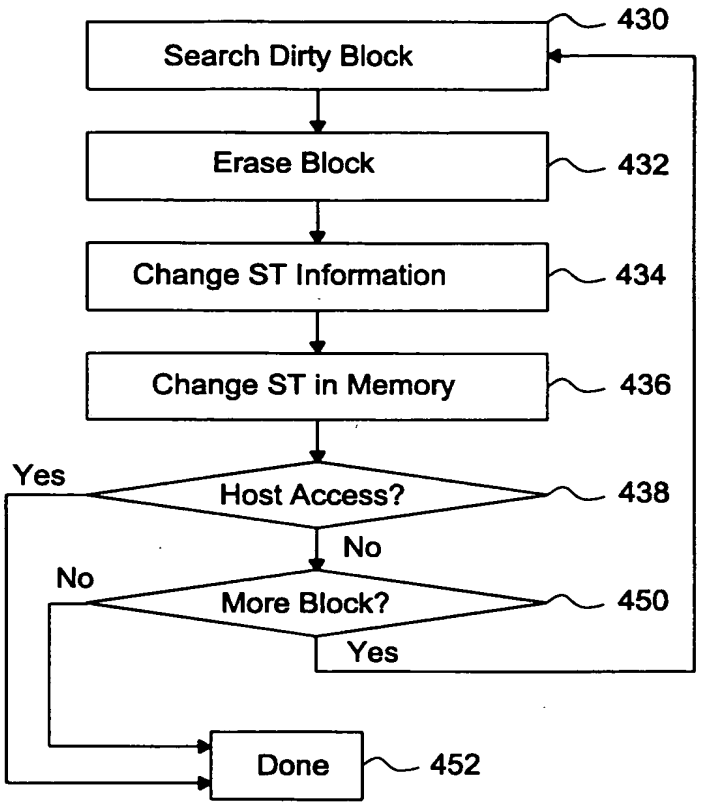
Search Dirty Block
430
Erase Block
432
Change ST Information
434
Change ST in Memory
436
Yes
Host Access?
438
No
No
More Block?
450
Yes
Done
452

FIG. 11

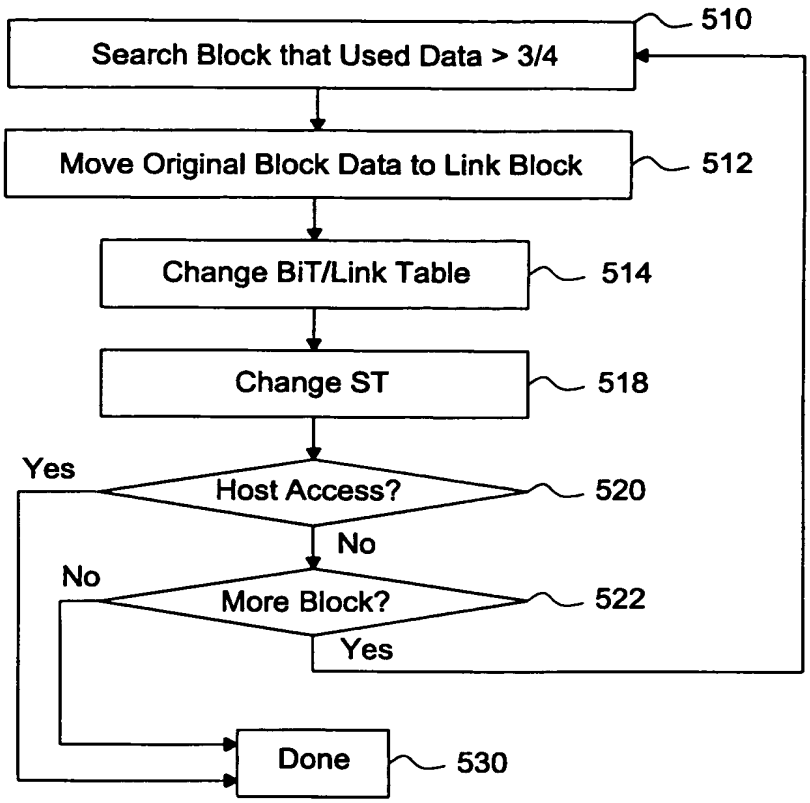
Search Block that Used Data > 3/4
510
Move Original Block Data to Link Block
512
Change BiT/Link Table
514
Change ST
518
Yes
Host Access?
520
No
No
More Block?
522
Yes
Done
530

FIG. 12

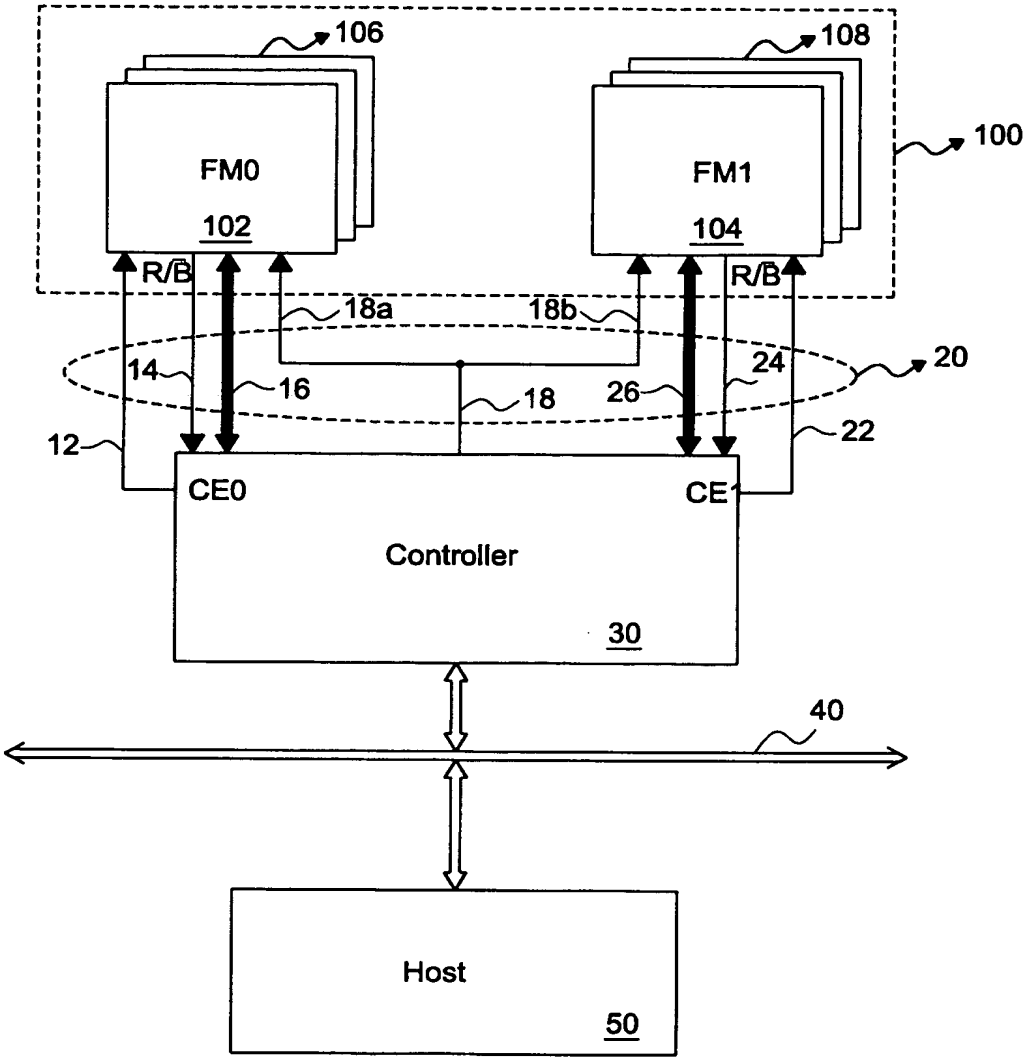
106
108
100
FM0
102
FM1
104
R/B
R/B
18a
18b
20
14
16
18
24
26
22
12
CE0
CE1
Controller
30
40
Host
50

FIG. 13

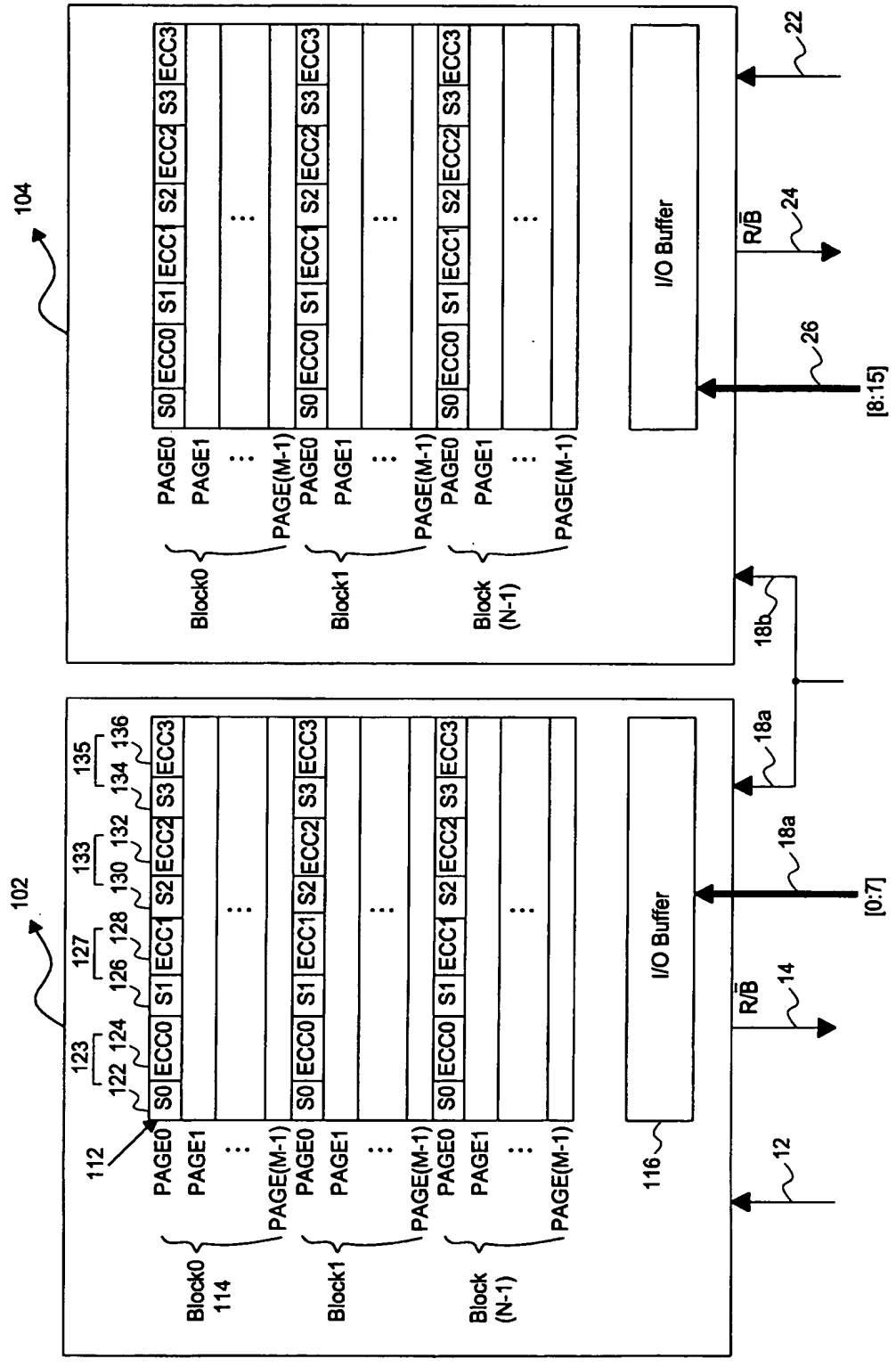
102
104
112
114
116
12
14
18a
18b
22
24
26
[0:7]
[8:15]
R/B
I/O Buffer
Block0
Block1
Block (N-1)
PAGE0
PAGE1
PAGE(M-1)
S0
ECC0
S1
ECC1
S2
ECC2
S3
ECC3
122
123
124
126
127
128
130
132
133
134
135
136

FIG. 14

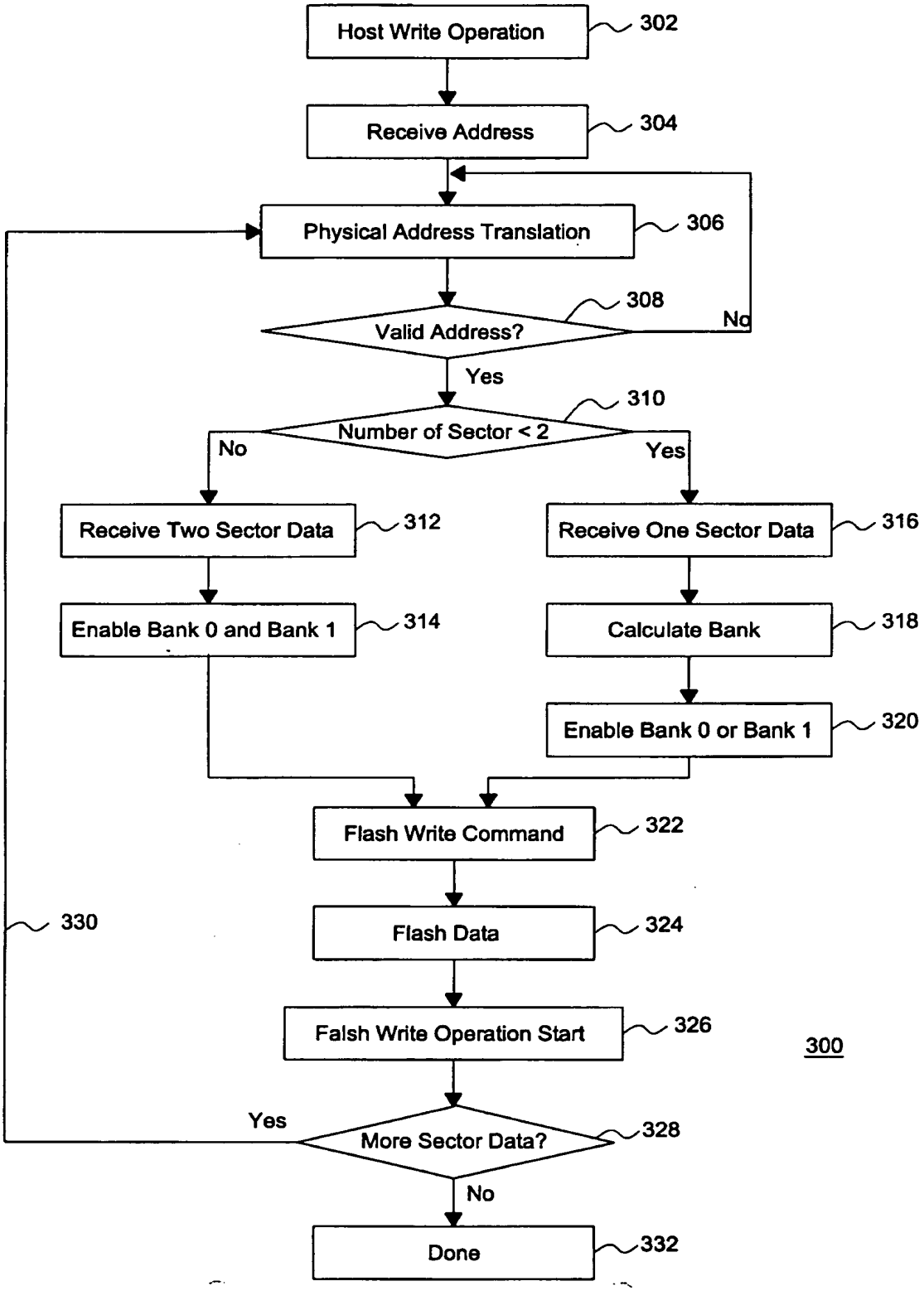
Host Write Operation
302
Receive Address
304
Physical Address Translation
306
Valid Address?
308
No
Yes
Number of Sector < 2
310
No
Yes
Receive Two Sector Data
312
Receive One Sector Data
316
Enable Bank 0 and Bank 1
314
Calculate Bank
318
Enable Bank 0 or Bank 1
320
Flash Write Command
322
330
Flash Data
324
Falsh Write Operation Start
326
300
Yes
More Sector Data?
328
No
Done
332

FIG. 15